

WHAT IS CLAIMED IS:

1. A method of demodulating a data stream transmitted between remote sites and a home base using stored parameters for each remote site, the method comprising:
  - receiving data from a current remote site at a home base;
  - retrieving at least one parameter associated with a next remote site from a memory;
  - storing the retrieved parameter for the next remote site in a first buffer;
  - storing at least one second parameter associated with the current remote site into the memory;
  - determining at least one initial channel characteristic for the next remote site based on the retrieved parameter;
  - receiving data from the next remote site at the home-base; and
  - demodulating the data received from the next remote site using the determined initial channel characteristic.
2. The method of Claim 1, further comprising determining error metrics for the data from the current remote site, wherein the error metrics are used to determine whether the at least one second parameter is stored into the memory.
3. The method of Claim 1, further comprising generating an index of remote sites and their associated parameters.
4. The method of Claim 1, wherein the parameter is a tap value.
5. The method of Claim 1, wherein the parameter is an attenuation level.
6. The method of Claim 1, wherein the parameter is a gain value.
7. The method of Claim 1, wherein the method is implemented in a Time Division Duplex system.
8. The method of Claim 1, wherein the initial channel characteristic includes a phase value.
9. The method of Claim 1, wherein the initial channel characteristic includes a gain value.
10. The method of Claim 1, wherein the method is performed by an equalizer.

11. A method of compensating for gain droop in a modem which stores equalizer coefficients across data bursts between a remote site and a home base, the method comprising:

- receiving channel data values from an equalizer;
- calculating the gain for the equalizer based on the received channel data values; and
- scaling the input to the equalizer to achieve a value of 1 based on the calculated gain.

12. A method of minimizing errors caused by adapting equalizer coefficients for each data burst from a remote site to a home base, the method comprising:

- retrieving a first equalizer coefficient for a current remote site;
- demodulating a data burst from the current remote site;
- determining the S/N ratio for the received burst;
- determining the error rate from the demodulated burst;
- comparing the determined S/N ratio and error rate to defined thresholds;
- and
- updating the first equalizer coefficient based on the comparisons.

13. A method of improving the convergence of an equalizer in a multi-modulation modem using a two part preamble, the method comprising:

- defining a first part of a preamble with a lower order section, wherein the lower order section is transmitted using QPSK modulation;
- defining a second part of the preamble with a higher order section, wherein the higher order section is transmitted using QAM 64 modulation;
- transmitting both the first and second parts of the preamble;
- receiving the transmitted preamble; and
- converging the equalizer based on the received preamble.

14. A method of providing a soft reset to a modem, the method comprising:
  - generating an interrupt to the modem;
  - halting a modem interface;
  - setting a reset bit;
  - flushing a buffer;
  - realigning the buffer;
  - reprogramming the buffer; and
  - restarting the modem interface.
15. The method of Claim 14, wherein the reset bit is a transmit-reset bit.
16. The method of Claim 14, wherein the reset bit is a receive-reset bit.
17. The method of Claim 14, wherein the interrupt occurs during modem transmission.
18. The method of Claim 14, wherein the interrupt occurs during modem reception.
19. The method of Claim 15, wherein the interrupt is generated in response to the modem transmitting at a rate faster than the data is received by the modem.
20. The method of Claim 18, wherein the interrupt is generated in response to the modem receiving cyclic redundancy check packets.
21. The method of Claim 19, wherein the modem is transmitting using QAM 64.
22. The method of Claim 14, wherein the modem is implemented in a Time Division Duplex communication system.
23. A method of determining an adaptation factor for an equalizer based on the expected modulation type of an incoming burst transmission, the method comprising:
  - calculating channel characteristics and metrics for a first burst transmission from a remote site;
  - comparing the channel characteristics and metrics;

determining an expected modulation type for a second burst transmission from the remote site based on the comparison;

selecting an adaptation factor based on the expected modulation type;

and

applying the selected adaptation factor to the second burst transmission.

24. A method of correcting the phase shift caused by the storage of tap values after each incoming burst transmission, the method comprising:

determining an angle of correction based on correlating the input and output of the equalizer; and

applying the determined angle of correction to the incoming signal.

25. The method of Claim 24, wherein the angle of correction is calculated using the equation  $\theta_{eq} = \text{angle}(c_0 + 0.627c_1)$ , wherein  $c_0$  is the center tap value, and wherein  $c_1$  is an adjacent tap value.

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